



Strategic Plan for the Prevention of Unintentional Injury, 2012–2016

PARTNERING WITH YOU FOR A SAFER MASSACHUSETTS

July 2013



Massachusetts Department of Public Health

Bureau of Community Health and Prevention
Division of Violence and Injury Prevention

Bureau of Health Statistics Research & Evaluation
Injury Surveillance Program

Executive Summary

Unintentional injuries are *the leading* cause of death for Massachusetts residents ages 15–44, *the second* leading cause of death for Massachusetts children ages 1–14, and *the fifth* leading cause of death among Massachusetts residents overall. When the cost of emergency medical services, outpatient care, rehabilitation, and lost wages are added to the initial costs of treatment, the lifetime costs of unintentional injuries sustained in 2010 by MA residents is estimated to be least \$8.5 billion.

The good news is that research has helped identify ways in which strategic approaches to the environment, to policies, and to behavior can create change: **injuries can be largely prevented.** This plan makes use of such proven strategies for change.

After describing the case for addressing unintentional injury, the public health role in its prevention, and the vision for a safer Massachusetts, this document lays out the strategic plan for the Massachusetts Department of Public Health's Injury Prevention and Control Program that focuses on four priority areas for injury prevention and their specific focus areas:

- **Falls Among Adults**
- **Poisonings:** Opioid Overdose Deaths
- **Motor Vehicle Traffic Injury:** Passenger Safety
- **Childhood Injury:** Safe Infant Sleep and Sports-related Head Injury

In each of these priority areas the current context is provided and data is presented that details the scope of the problem. The strategies that the Injury Prevention and Control Program and its partners will use to prevent these injuries are then outlined in four categories: Infrastructure and Partnership Building; Program Interventions; Policy Interventions; and Data Gathering/Surveillance and Evaluation. Finally, clear measures of success are provided.

This document is meant to be a reference for action, not a rigidly-designed pathway or a document simply to be placed on a bookshelf. It is also not intended for use only by the small staff of the MDPH Injury Prevention and Control Program. Rather, it has been designed to be flexible and to reflect a strategic plan that will come to life through the work of stakeholders and partners, particularly those of the Massachusetts Prevent Injuries Now Network (MassPINN) who have contributed to its content and will contribute to its success.

This plan is an invitation — to stakeholders, public health colleagues, policy makers, and citizens — to join the work of creating a safer Massachusetts for all its residents.



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Detailed **Implementation and Evaluation Plans** as well as **Logic Models** for each of the focus areas described in this plan are available at www.mass.gov/dph/injury

For questions regarding data or additional data sources, please contact the Injury Surveillance Program at 617-624-5648

Injury Prevention: Making the Case

There is not a person in Massachusetts whose life is untouched by injury. Injuries, of all types, are the leading cause of death for people ages 1 to 44 years and the third leading cause of death for all ages.

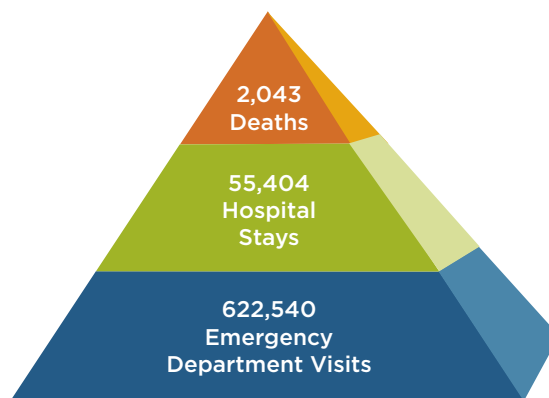
In fact, injuries kill more children and youth ages 1–19 than all other causes *combined*. Broadly used, the term “injury” includes unintentional injuries, self-inflicted injuries and suicides, and assault-related injuries and homicides. Injuries can be fatal or non-fatal.

On an average day in Massachusetts: 6 residents die from unintentional injury, 152 require a hospital stay, and more than 1700 are treated at an emergency room.

Injuries can have significant physical consequences, but they also result in significant social, emotional, and financial consequences. Injury impacts our lives, our families, our communities, and our institutions.

The term “unintentional injury” has been adopted by the public health community to replace “accident,” because people think of accidents as chance occurrences that cannot be prevented. Researchers have learned, however, that injuries occur in patterns based on certain circumstances. *Injuries are therefore understandable and predictable.* And because we can understand what makes injuries more likely to occur, injuries can largely be prevented.

FIGURE 1: ANNUAL MAGNITUDE OF UNINTENTIONAL INJURY AMONG MASSACHUSETTS RESIDENTS, 2010



Data Sources: Registry of Vital Records and Statistics, MDPH; MA Hospital Discharge, Outpatient Observation Stay and Emergency Department Discharge databases, MA Center for Health Information and Analysis

What's an injury?

Unintentional injuries are bodily harm that can be caused by fires, car crashes, drowning, sharp objects, guns, poisoning, being struck by something, hot liquids like boiling water, tripping on the sidewalk, falling down the stairs, bike crashes, and more.

TABLE 1: LIFETIME MEDICAL & WORK LOSS COSTS* OF UNINTENTIONAL INJURY, MASSACHUSETTS, 2010

	Deaths	Hospitalizations	ED Visits	Total Injuries
Number of Cases	2,043	47,607	622,540	672,190
Medical Costs	\$29 Million	\$1.2 Billion	\$588 Million	\$1.9 Billion
Work Loss Costs	\$2 Billion	\$2.6 Billion	\$2 Billion	\$6.6 Billion
Combined Costs	\$2.1 Billion	\$3.8 Billion	\$2.6 Billion	\$8.5 Billion

**All costs are estimated and represent lifetime cost estimates for injuries sustained by Massachusetts residents during 2010. Costs may not add to total due to rounding. Hospital discharge and emergency department visits do not include fatal injuries. Transfers are also excluded from hospital discharge counts. This summary does not include costs related to observation stays or costs of injuries that are not treated at an acute care hospital, as that data is not available through WISQARS.*

Data Source: CDC Web-based Injury Statistics Query and Reporting System (WISQARS)

Unintentional injuries are the *leading* cause of death for Massachusetts residents ages 15–44, the *second leading* cause of death for Massachusetts children ages 1–14, and the *fifth leading* cause of death among Massachusetts residents overall. The toll of unintentional injury in Massachusetts is enormous. In 2010, a total of 2,043 residents — an average of six residents every day — died as a result of unintentional injuries. Based on average life expectancy, unintentional injury deaths in 2010 alone accounted for approximately 30,000 potential years of life lost by Massachusetts residents.¹

The financial burden of unintentional injuries is also enormous. In 2010, charges associated with the treatment of unintentional injuries in Massachusetts acute care hospitals and emergency departments alone totaled over \$2.3 billion. When the cost of emergency medical services, outpatient care, rehabilitation, and lost wages are added to the initial costs of treatment, the lifetime costs of unintentional injuries sustained in 2010 by MA residents is estimated to be least \$8.5 billion.²

According to the Centers for Disease Control and Prevention, Massachusetts has the lowest rate of unintentional injury death to children ages 0–19 of any state. Between 1981 and 2010, the number of children ages 0–14 dying from unintentional injury in this state dropped from 121 per year to 22.

¹ Source: CDC WISQARS. Years-of-Potential-Life-Lost (YPLL) are based on deaths among persons under age 65.

² Source: CDC WISQARS.



PREVENTION WORKS: A HISTORY OF ACCOMPLISHMENT

Despite the enormous impact of unintentional injury in the lives of Massachusetts residents, the history of preventing unintentional injuries is a story of success — as well as remaining opportunities for improvement.

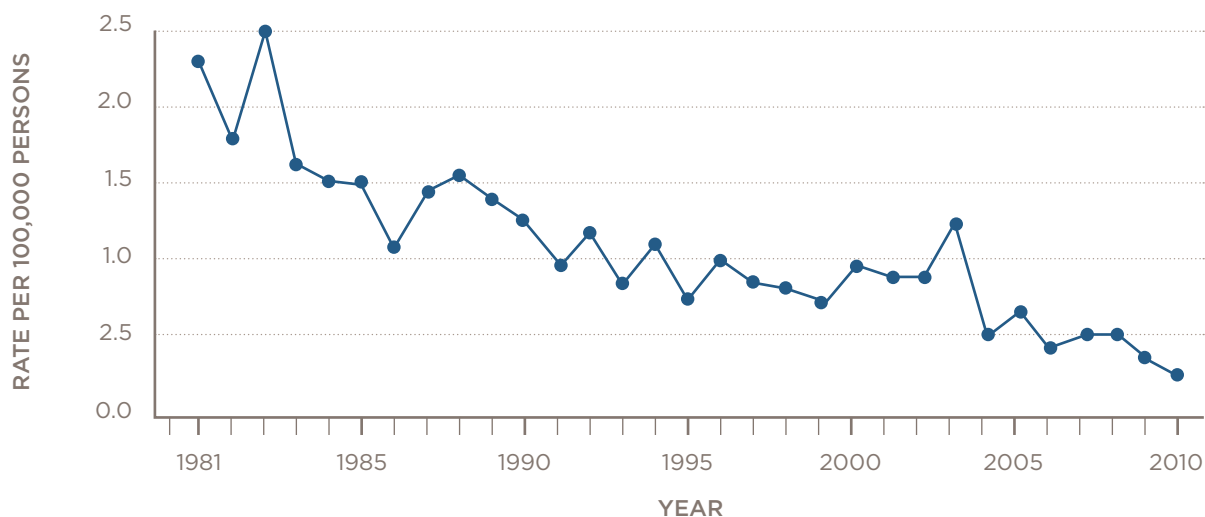
Over the last 30 years, Massachusetts has seen significant reductions in some of the major causes of unintentional injury. Three areas in which significant improvements have been made are fire/burn-related injuries, motor vehicle crash injuries, and unintentional childhood injury.

Deaths to Massachusetts residents from fire/burn injuries dropped from 132 deaths in 1981 to 25 deaths in 2010. Taking population changes into account, this represents an astounding 87% decrease in death rates, from an age-adjusted death rate of 2.3 to 0.3 per 100,000 persons. Injury prevention strategies and policies, such as the use of smoke detectors and sprinklers in homes and businesses, as well as improvements in emergency services and medical care, all contributed to this reduced death rate.

**FIGURE 2: FIRE/BURN DEATH RATES,*
MASSACHUSETTS, 1981-2010**

**Age-adjusted rate per 100,000 persons.*

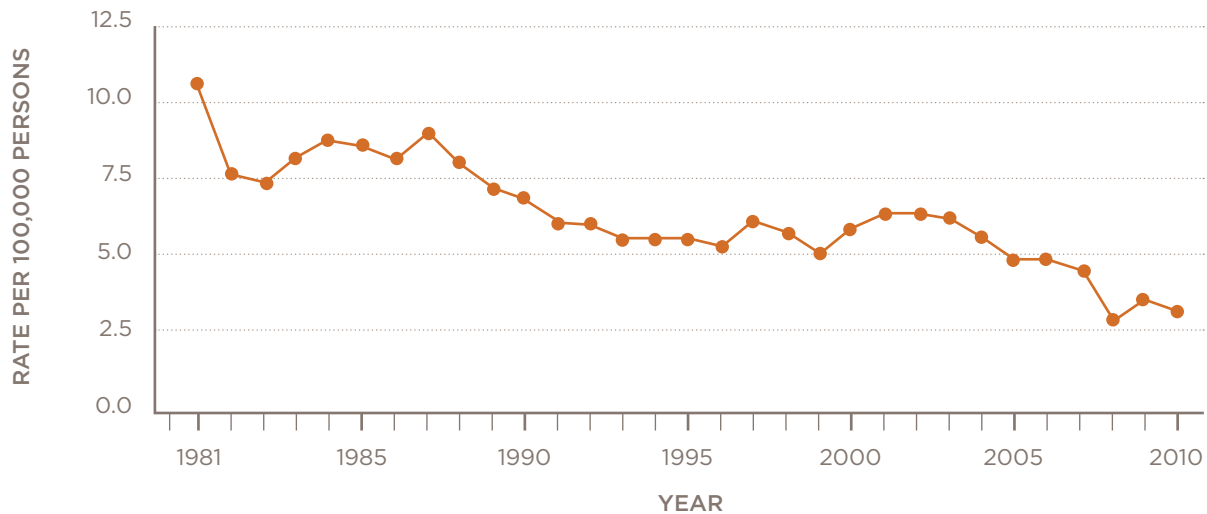
Data Source: CDC Web-based Injury Statistics Query and Reporting System (WISQARS)



**FIGURE 3: MOTOR VEHICLE OCCUPANT DEATH RATES,*
MASSACHUSETTS, 1981-2010**

**Age-adjusted rate per 100,000 persons.*

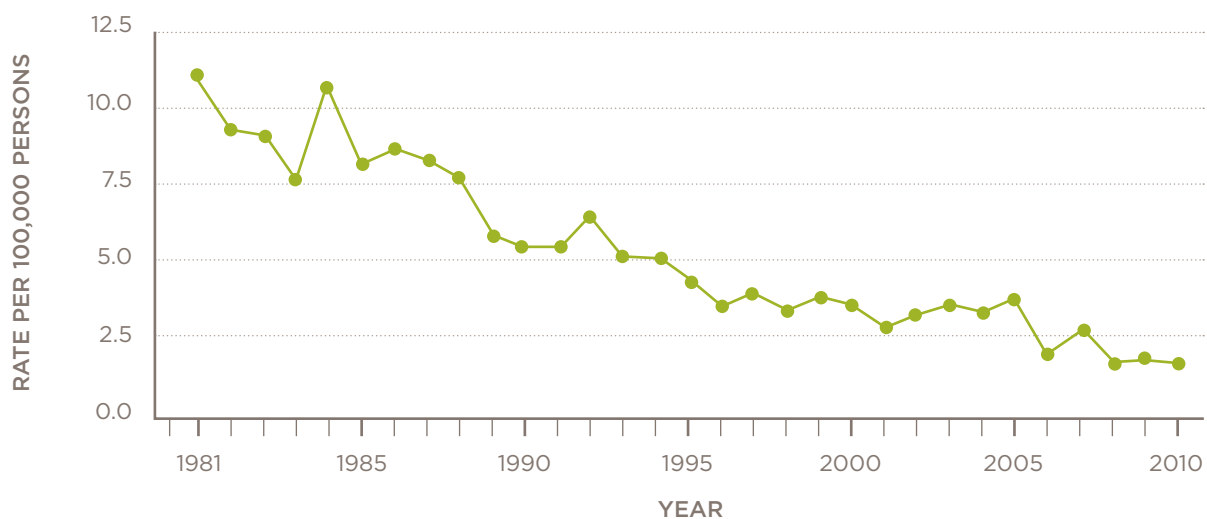
Data Source: CDC Web-based Injury Statistics Query and Reporting System (WISQARS)



**FIGURE 4: UNINTENTIONAL INJURY DEATH RATES,*
MASSACHUSETTS CHILDREN AGES 0-14, 1981-2010**

**Age-adjusted rate per 100,000 persons.*

Data Source: CDC Web-based Injury Statistics Query and Reporting System (WISQARS)



Over the same time period, deaths of Massachusetts drivers and passengers from motor vehicle (MV) crashes decreased from 586 deaths in 1981 to 229 deaths in 2010. This equals a 64% decline in MV occupant death rates, from an age-adjusted rate of 9.0 to 3.2 per 100,000 persons. Some of the greatest declines occurred between 2003 and 2010, when MV occupant death rates dropped more than 9% *each year*. Improved automobile safety standards, roadway safety features, and changes in laws and social norms around drunk driving and the use of child safety seats and seat belts have contributed to these improved rates.

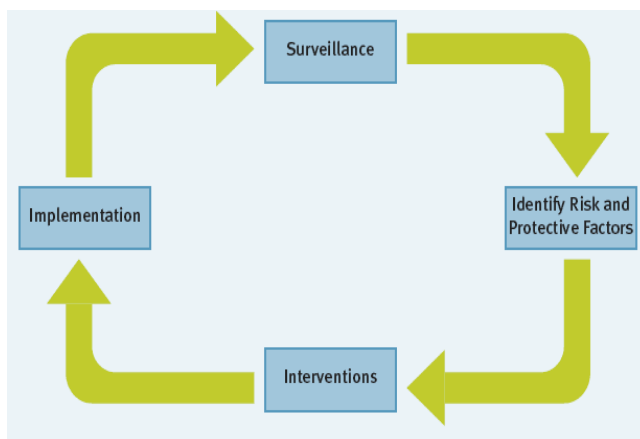
Massachusetts currently has one of the lowest rates of unintentional injury death to children in the nation.³ Over the past 30 years, we have seen tremendous reductions in deaths to children from unintentional injury. The number of Massachusetts children ages 0–14 who died from unintentional injuries over this time period decreased from 121 to 22 children. Accounting for a growing population, this equals an 82% decline in death rates, from an age-adjusted rate of 10.8 to 1.9 per 100,000 children ages 0–14. Some of the strategies mentioned above, such as smoke alarms and child safety seats, have contributed to these declines. The infant “Back to Sleep” campaign, child proof medication packaging, improvements in emergency medical services for children, monitoring and recalls of dangerous children’s toys and other products, building codes for pools, and many other strategies have also played a role in this decline. But with 337 unintentional injury deaths to children ages 0–14 in the last decade (2001–2010), there is much work to be done.

³ CDC *Vital Signs*, 2012



The Public Health Role

The public health approach to addressing injury is the same as that to preventing disease. Data is gathered to learn about the size of the problem and what creates greater risk or protection.



Based on that information, interventions are developed and put into place. The impact of these programs or policies are then measured to see whether they work. Using the results of the evaluation, the interventions are improved. This process creates a base of evidence so others can implement programs and policies that work.

The field of injury prevention has developed a useful framework, sometimes referred to as “the four E’s” which can help in thinking about the range of strategies that should be considered as ways to reduce injury.

THE E’S OF INJURY PREVENTION INCLUDE:

Engineering/Environment

This E refers to potential modifications to the environment or to products that can make things safer. Think, for example, about the seat belts in cars or safe infant cribs which assure that the slats are close enough together so a baby cannot become

stuck. Rumble strips on the sides of the roadway are another important example. Each of these can be thought of as an engineering or environmental strategy to increase safety.

Enactment/Enforcement

This E refers to the enactment and enforcement of laws and other policies designed to reduce injury. Examples of these include laws requiring seat belt use and school policies requiring students who receive a head injury while playing sports to be pulled from play.

Education

This E refers to providing professionals and the public with the information that they need to make safe choices and prevent injury. Parents, for example, need information about what car seats provide the greatest protection or how to place their infant safely to sleep. Friends and family of those coping with opioid addiction may need to learn about steps they can take if they witness drug overdose. Clinicians treating sports injuries need training on concussion management.

Emergency Medical Services

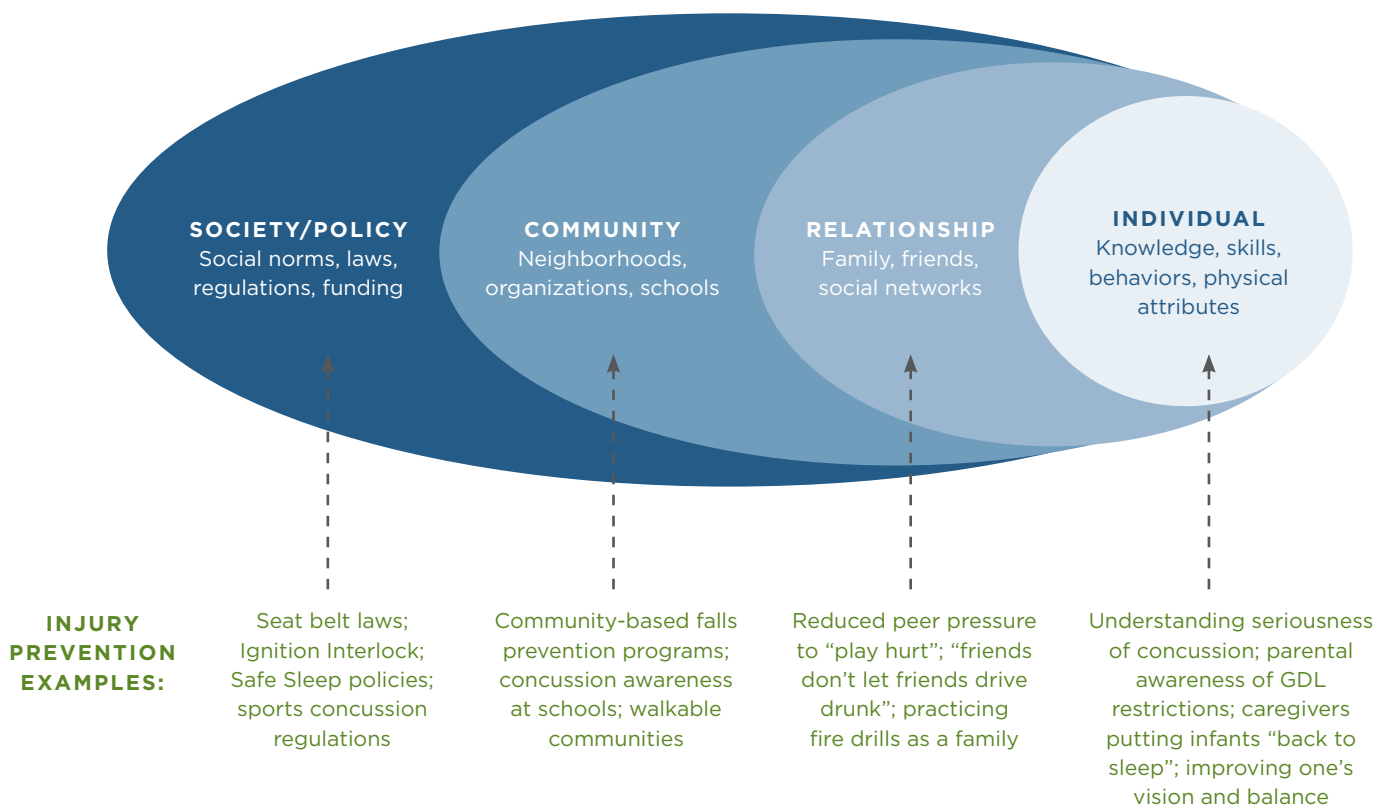
Advances in Emergency Medical Services, including assuring that injured individuals receive quality trauma management in the field and that the most severely injured are transported directly to hospitals with the capacity to respond to severe trauma, have contributed significantly to reductions in the consequences of injury.

Woven into all focus areas of the plan are strategies that address engineering/environmental solutions, enactment/enforcement and implementation of policies, and education of individuals or groups of individuals to improve their knowledge and skills in order to change behavior.

The field of injury prevention also draws on a prevention model used throughout public health. This model is referred to as the Socio-Ecological

Model. It recognizes that prevention interventions and strategies can happen at many different levels: they can impact **individual** knowledge, skills, and attitudes or respond to physical attributes; they can build resiliency at an interpersonal or **relationship** level; they can impact **communities** or they can work at a societal level, focusing on **social norms** and **policy**, whether that be laws, regulation, agency policy, or programmatic policy.

FIGURE 5: SOCIO-ECOLOGICAL MODEL





Like other public health fields, injury prevention emphasizes strategies in the outer levels of the socio-ecological model (i.e. society/policy and community) because they can have the broadest public health impact. This plan emphasizes these outer levels, but includes strategies at all levels of the model in order to take advantage of the best evidence available/emerging best practices as well as the resources and strengths offered by our partners in this work.

Finally, the field of injury prevention is increasingly recognizing the importance of the framework known as the *social determinants* of health to our work. The social determinants of health are the larger circumstances in which people are born, grow up, work, and age. These circumstances are influenced by access to resources and thereby help to explain significant differences or disparities in the health of certain populations. Social determinants of health can include such things as race, class, gender, educational level, where you live, and employment conditions. Although the impact of social determinants of health may be difficult to assess, it is important to recognize these factors and to design strategies that are responsive to any such disparities. As this plan has developed, we have referred to this model to ensure that strategies are responsive to disparities and aim towards increasing health equity.

Partnerships and the Massachusetts Prevent Injuries Now Network (MassPINN)

Addressing injury prevention in Massachusetts cannot be done by one agency or organization.

Internally to the Department of Public Health, unintentional injury prevention and surveillance efforts are coordinated by the Division of Violence and Injury Prevention's Injury Prevention and Control Program (IPCP), located within the Bureau of Community Health and Prevention, and by the Injury Surveillance Program (ISP), located within the Bureau of Health Statistics, Research and Evaluation. These programs coordinate with other Bureaus and programs across the Department to design and implement program and policy strategies in order to improve the health and safety of Massachusetts residents. Through these collaborations, program and policy strategies are designed and implemented.

The Department also convenes and coordinates with a committed group of stakeholders from a wide range of disciplines, state agencies, private organizations, academic institutions, and individuals, who have come together to provide a strong, cohesive, and effective voice for injury prevention programs and policies. This group also assists in identifying and seeking the resources needed to help those interventions succeed. This group, known as the Massachusetts Prevent Injuries Now Network (MassPINN), has been recognized for its effectiveness by the Centers for Disease Control and Prevention's National Center for Injury Prevention and Control as the recipient of their 2010 State/Local Health Impact Award.

Internal Partners

- Bureau of Environmental Health
- Bureau of Substance Abuse Services
- Bureau of Health Care Quality and Safety
- Essential School Health Program
- Healthy Homes
- Massachusetts Early Childhood Home Visitation Program
- Occupational Health Surveillance Program
- Office of Emergency Medical Services
- Prescription Monitoring Program
- WIC Program

Members of MassPINN have provided extensive guidance and support in the development of this strategic plan and will be instrumental in its implementation.

Between September 2011 and April 2012 MassPINN members reviewed data, researched the evidence base, and selected the major priority areas that form the foundation of this plan. They also participated in prioritizing and selecting the specific focus areas and strategies that will be undertaken over the next five years.



Massachusetts Prevent Injuries NOW!

Members & Partners:

- AAA New England
- Baystate Medical Center
- Belts Ensure a Safer Tomorrow (BEST) Coalition
- Beth Israel Deaconess Medical Center
- Boston Children's Hospital
- Boston Medical Center
- Boston Public Health Commission
- Boston University School of Public Health
- Brain Injury Association of Massachusetts
- Brigham and Women's Hospital
- Children's Trust Fund
- Drago Expert Services
- EDC/Children's Safety Network
- Emerson College, Health Communication
- Executive Office of Elder Affairs
- Harvard Medical School
- Harvard School of Public Health/ Injury Control Research Center
- Highway Safety Division, EOPSS
- Lahey Clinic
- Massachusetts Department of Transportation
- Massachusetts General Hospital
- Massachusetts Interscholastic Athletic Association
- Massachusetts Medical Society
- MassPRO
- Massachusetts Rehab Commission
- Massachusetts Senior Care Association
- Mothers Against Drunk Driving
- Northshore Medical Center
- Norwell Visiting Nursing Association
- Office of the Child Advocate
- Partners Health Care
- Poison Control Center
- Registry of Motor Vehicles
- Safe Kids Boston
- Safe Kids Western Massachusetts
- Safe Roads Alliance
- Safety Research and Strategies
- South Shore Hospital
- State Fire Marshall, Division of Fire Services
- Students Against Destructive Decisions
- The Safety Institute
- Tufts Medical School



Epidemiology of Unintentional Injury in Massachusetts: A Closer Look

As noted earlier, most injuries in Massachusetts, whether fatal or non-fatal, are due to unintentional events. Unintentional injury is the *leading cause* of death for Massachusetts residents ages 15–44, the

second leading cause of death for Massachusetts children ages 1–14, and the *fifth leading* cause of death among Massachusetts residents of all ages.

TABLE 2: TEN LEADING CAUSES* OF DEATH, BY AGE GROUP, MASSACHUSETTS, 2010

AGE GROUPS (NUMBER OF DEATHS IN PARENTHESIS)									
Rank** <1 year		1-14 years	15-24 years	25-44 years	45-64 years	65-74 years	75-84 years	85+ years	All Ages
#1	Short gestation & LBW (68)	Cancer (20)	Unintentional Injury (166)	Unintentional Injury (475)	Cancer (3,317)	Cancer (2,925)	Cancer (3,814)	Heart Disease (5,753)	Cancer (12,973)
#2	Congenital malformations (50)	Unintentional Injury (18)	Homicide (10)	Cancer (279)	Heart Disease (214)	Heart Disease (1,429)	Heart Disease (2,982)	Cancer (2,591)	Heart Disease (11,996)
#3	SIDS*** (34)	Homicide (10)	Suicide (78)	Heart Disease (214)	Unintentional Injury (166)	Chronic lower respiratory disease (460)	Chronic lower respiratory disease (848)	Stroke (1,291)	Stroke (2,504)
#4	Pregnancy complications (32)	Congenital malformations (9)	Cancer (22)	Suicide (211)	Chronic liver disease (41)	Stroke (283)	Stroke (679)	Alzheimer's disease (1,194)	Chronic lower respiratory disease (2,380)
#5	Complications of placenta (27)	Ill-defined conditions/ signs & symptoms (9)	Heart Disease (17)	Homicide (80)	Chronic lower respiratory disease (245)	Diabetes (192)	Alzheimer's disease (470)	Chronic lower respiratory disease (810)	Unintentional Injury (2,043)
#6	Bacterial sepsis of newborn (9)	In situ neoplasms (5)	Ill-defined conditions/ signs & symptoms (12)	Ill-defined conditions/ signs & symptoms (52)	Suicide (221)	Nephritis (170)	Nephritis (434)	Influenza & pneumonia (701)	Alzheimer's disease (1,770)
#7	Respiratory distress (8)	Heart disease (3)	Congenital malformations (11)	Chronic liver disease (41)	Diabetes (216)	Unintentional Injury (140)	Influenza & pneumonia (340)	Nephritis (606)	Nephritis (1,378)
#8	Circulatory system (7)	Perinatal conditions (3)	Injuries of undetermined intent (8)	Stroke (34)	Stroke (207)	Septicemia (135)	Diabetes (289)	Unintentional Injury (417)	Influenza & pneumonia (1,285)
#9	Pulmonary hemorrhage (7)	Suicide (3)	Stroke (4)	HIV/AIDS (28)	Nephritis (143)	Influenza & pneumonia (122)	Unintentional Injury (263)	Ill-defined conditions/ signs & symptoms (12)	Diabetes (1,024)
#10	Intrauterine Hypoxia (5)	Injuries of undetermined intent (3)	Influenza & pneumonia (4)	Diabetes (23)	Septicemia (112)	Chronic liver disease (117)	Septicemia (217)	Diabetes (302)	Septicemia (758)
Total	319	113	453	1,823	8,753	7,423	13,639	19,888	52,420

*Based on "underlying" or primary cause of death

**Rank is based on number of deaths due to that cause. The number of deaths is shown in parentheses.

*** SIDS or Sudden Infant Death can be associated with unsafe sleep position and unsafe sleep environments. Some of these deaths may be preventable through application of injury prevention initiatives.

Data Source: MA Registry of Vital Records and Statistics, MDPH



It is interesting to note that unintentional injury is responsible for many more deaths than homicide and suicide, injury issues that typically receive the greatest public interest, concern, and resources.

In Massachusetts, we see definite patterns emerge and specific causes of injury “rising to the top”. In recent years, the three leading causes of unintentional injury deaths and hospital stays in Massachusetts have been poisoning (which includes overdoses), falls among older adults, and motor vehicle crashes. These three types of injury accounted for 8 out of 10 unintentional injury deaths of Massachusetts residents in 2010. Poisonings/overdoses, the leading cause of unintentional injury death in Massachusetts, led to one third (33%) of these deaths. The majority of these deaths were associated with opioids — both illicitly obtained and prescribed for pain — such as heroin, oxycodone, hydrocodone, methadone, and others. Fall-related injuries cause one quarter (25%) of unintentional injury deaths; 83.6% of these fall deaths were to adults ages 65 and over. Another one fifth (20%) of unintentional injury deaths were to occupants in motor vehicle crashes, including drivers and passengers.

Data — the epidemiology of injury — has been essential in determining the focus areas for this strategic plan as it is critical in identifying need.

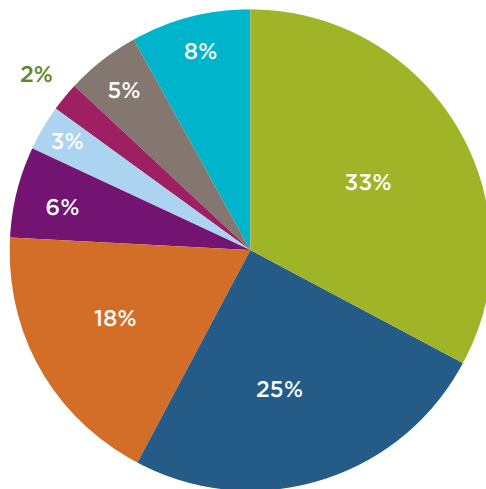
Guiding Principles

However, additional factors have also been considered when identifying priorities:

- **Equity:** working to eliminate health disparities and provide equal access to resources
- **Collaboration:** considering where MDPH has or can engage partners from government, academic, business, and community organizations
- **Coordination:** taking advantage of opportunities to leverage resources from multi-sector partners to foster communication and to implement systems-level changes in programs and services
- **Innovation:** developing new and creative approaches to incentivize best practices
- **Integration:** capitalizing on opportunities to embed injury prevention goals and strategies/activities into new and existing policies and programs
- **Sustainability:** building capacity and leveraging new and existing resources to maintain and expand the Injury Prevention program
- **Evidence based/Evidence-informed:** implementing programs and policies that are based in evidence

FIGURE 6: LEADING CAUSES OF UNINTENTIONAL INJURY DEATH, MA RESIDENTS, 2010 (N = 2,043)

■ Fall
 ■ Motor Vehicle-related
 ■ Poisoning/Overdose
 ■ Suffocation
 ■ Drowning
 ■ Other Transport
 ■ Other*
 ■ Unspecified

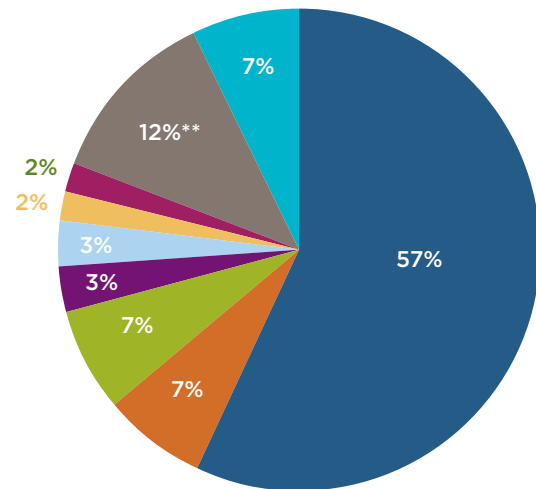


*"Other" includes fire/burn, natural/environmental, struck by/against, machinery, firearm and other specified causes.

Data Source: Registry of Vital Records and Statistics, MA Department of Public Health

FIGURE 7: LEADING CAUSES OF UNINTENTIONAL INJURY HOSPITAL STAYS,* MA RESIDENTS, FY2011 (N = 56,475)

■ Fall
 ■ Motor Vehicle-related
 ■ Poisoning/Overdose
 ■ Struck By/Against
 ■ Natural/Environment
 ■ Overexertion
 ■ Other Transport
 ■ Other**
 ■ Unspecified



*Excludes transfers and in-hospital deaths.

**"Other" includes suffocation, cut/pierce, fire/burn, machinery, firearm, near-drowning and other specified causes.

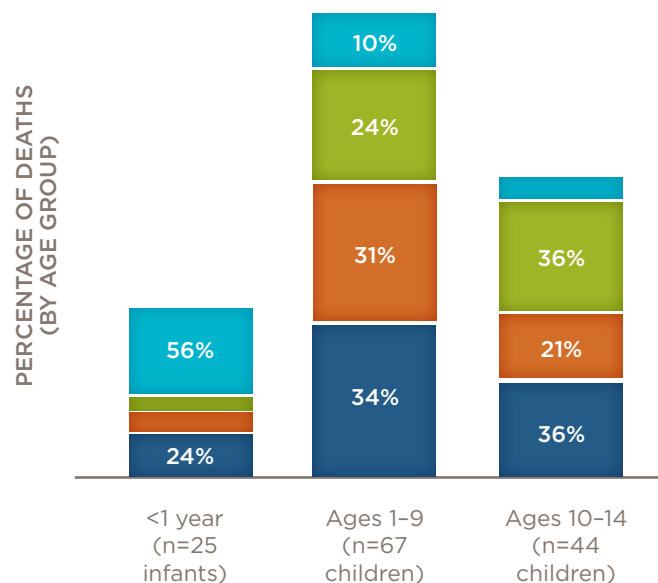
Data Sources: MA Hospital Discharge and Outpatient Observation Stay databases, MA Center for Health Information and Analysis

FIGURE 8: LEADING CAUSES OF UNINTENTIONAL INJURY DEATH,* MA CHILDREN AGES 0-14, BY AGE GROUP, 2010 (N = 136)

*Not all cases of Sudden Unexpected Infant Death are included due to current coding definitions. Motor Vehicle (MV)-related deaths include pedestrians and bicyclists struck by a motor vehicle.

Data Source: Registry of Vital Records and Statistics, MDPH

■ Suffocation
 ■ MV-related
 ■ Drowning
 ■ All Other



Scope and Structure of the Plan

This strategic plan has been developed for the MDPH Injury Prevention and Control Program (within the Bureau of Community Health and Prevention's Division of Violence and Injury Prevention) and the Injury Surveillance Program (within the Bureau of Health Statistics, Research and Evaluation). Key to the success of this plan will be the collaboration and support of all those internal and external partners with a stake in injury prevention.

The plan focuses on **unintentional injury**. The Division of Violence and Injury Prevention has existing and complementary plans that focus on Suicide Prevention (<http://www.mass.gov/eohhs/docs/dph/com-health/injury/suicide-strategic-plan.pdf>) and Sexual Violence Prevention (<http://www.mass.gov/eohhs/docs/dph/com-health/violence/sv-prevention-plan.pdf>) and is a party to the administration's Youth Violence Prevention Plan.

This five year strategic plan has identified **Priority Areas** based on leading causes and consequences of unintentional injury across the lifespan. Additionally, the plan recognizes the state's special responsibility to the health and safety of children as well as the fact that unintentional injury is the second or third leading cause of death for children ages 0–14.

We have therefore selected the following four Priority Areas:

- Falls Among Older Adults
- Poisonings
- Motor Vehicle Traffic Injury
- Childhood Injury

In the sections that follow there is a brief description of each of these Priority Areas, the epidemiology of the problem (including the prevalence, the populations at greatest risk, and the circumstances of these injuries), information about the state of the science (what we know about what works or “evidence base” for prevention), and what is already in place in Massachusetts (the policies, programs, and partnerships that address this area). Unless otherwise specified, all of the data presented in the following sections represents unintentional injuries.





Within each priority area, we have identified specific **Focus Areas** where MDPH will be addressing its greatest efforts over the next five years. These focus areas have been chosen based on the incidence and severity of the injury, the evidence base, and the ability of the MDPH, with its resources and those of its stakeholders and partners, to make real and measurable difference over these five years.

This plan includes the **Strategies** that will be used to decrease the health impact of injuries in each of these Focus Areas.

These strategies were developed with extensive stakeholder input and address:

- Infrastructure and Partnership Building
- Program Interventions
- Policy Interventions
- Data Gathering/Surveillance & Evaluation

Finally, the evaluation of our efforts will be critical to measuring the overall success of this plan. In order to identify which strategies are working and which need modification or enhancements, we list our expected short- and long-term outcome measures for each of focus areas under a subsection entitled “**Measuring Our Success.**” Some of these measures are explicit health outcomes (for example, reduced death or hospitalization rates), while other measures are indirectly related but expected to impact health outcomes (for example, increased seat belt use or providing data to policy makers). Detailed implementation and evaluation plans for each of the focus areas can be found at www.mass.gov/dph/injury.

Overall Vision of the Plan

In developing this plan, MDPH and our partners have created a vision and basic strategies that each Focus Area will employ and build upon in achieving our objectives. As with each of our Focus Areas, this overarching vision includes strategies that address **Infrastructure and Partnerships, Program Interventions, Policy Interventions, and Data/Surveillance and Evaluation.**

What follows are the facts, current context, evidence, recommended programs and policies, and expected outcomes for each of our identified Focus Areas.

We look forward to working with our partners to move this strategic plan forward in each of these areas.

TABLE 3: PARTNERING WITH YOU FOR A SAFER MASSACHUSETTS

Infrastructure & Partnerships	Program Interventions	Policy Interventions	Data/Surveillance & Evaluation
<ul style="list-style-type: none">• Develop and maintain effective and efficient infrastructure including sufficient staffing• Facilitate community building and engagement• Actively engage stakeholders/partners who can provide diverse perspectives• Maintain and enhance data systems	<ul style="list-style-type: none">• Create public awareness and educate the public, legislators, and other decisions makers• Develop materials that promote prevention and hazard awareness• Identify and implement evidence-informed interventions that address four focus areas• Conduct appropriate interventions to address identified disparities	<ul style="list-style-type: none">• Play a leadership role in the identification, promotion and implementation of policy at all levels• Provide data and research findings to key policy makers and public health leadership	<ul style="list-style-type: none">• Provide timely analysis, synthesis, and dissemination of data• Evaluate the implementation and outcomes of interventions and use for program improvement

Falls Among Older Adults



Almost all of us have stories of an older family member, friend, or neighbor who experienced a fall while walking down the stairs, slipping in the bathroom, or tripping on a throw rug or clutter on the floor. Sometimes these events are minor and easily dismissed but too often they are serious, resulting in broken bones like hip fractures, traumatic brain injuries (TBIs), and even death. One of the misguided beliefs about falls is that they are an inevitable part of the aging process and are to be expected. While fall deaths are on the rise, we know that older adult falls can be prevented.

The Facts

According to the CDC, each year in the United States one third of people 65 years and older fall and their risk for falling continues to rise with advancing age. This higher risk population is rapidly growing in Massachusetts and is projected to increase to 20.9% of the state's population by the year 2030 (compared with 13.5% of the population in 2000).

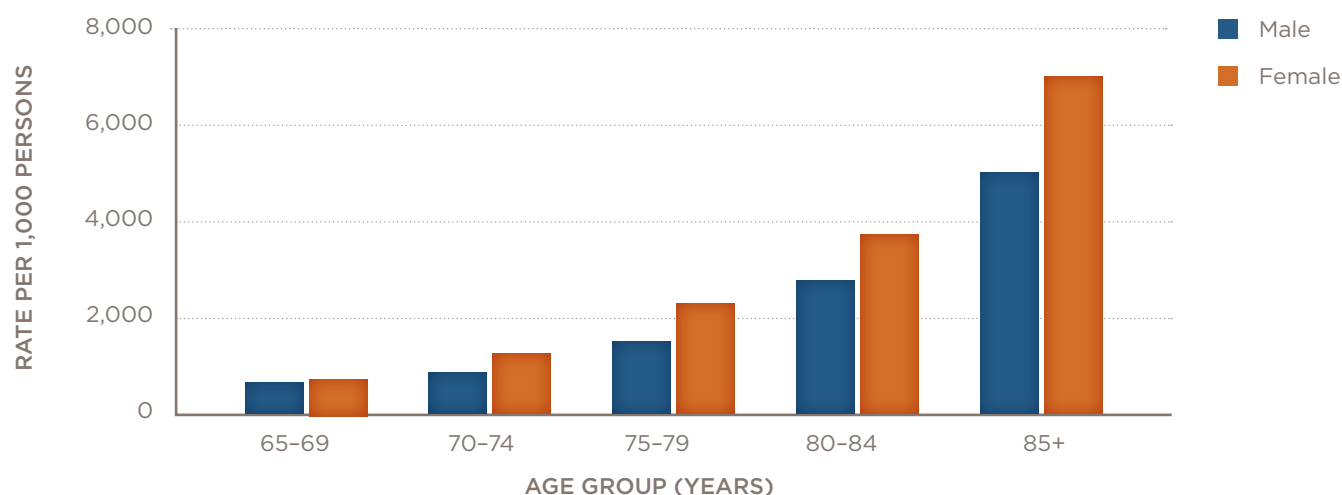
Falls are the leading cause of fatal and non-fatal injuries for people 65 and older in Massachusetts. On average, every 13 minutes an older adult is seen in an emergency department (ED) for a fall-related injury and every 25 minutes an older adult is hospitalized for a fall-related injury. In 2010, Massachusetts older adults had over 40,000 ED visits and 21,000 hospital stays due to fall-related injuries. Even more compelling, on an average day, the injuries sustained by an older adult in association with a fall results in at least one fatality (434 fall deaths occurred in 2010).

Not only is the population of older adults in Massachusetts increasing, but rates of fall-related injuries are also increasing among people ages 65 and older. From 2002 through 2010, the age-adjusted rates of ED visits for fall-related injuries in this population increased by 8% (from nearly 35,000 to over 40,000 visits) and age-adjusted hospital stay rates climbed 10% (from over 18,000 to over 21,000). Among non-fatal falls treated in Massachusetts acute care hospitals, one in five is associated with a traumatic brain injury (TBI) and one in ten involves a hip or other femur fracture.

In Massachusetts, falls are the primary cause of injury-related death and non-fatal injuries among both older men and women, but men age 65 and older have greater fall death rates than women. In 2010, age-adjusted death rates among men were 9% higher than among women in this age group. Conversely, women have considerably higher rates of hospital care for non-fatal fall-related injuries; in 2010, older adult women had 41% higher rates of hospital stays than their male counterparts.

Adults age 85 and older experience the highest fall death rates. In 2010, fall death rates in Massachusetts in this age category were *19 times higher* than for those at 65 to 69 years of age.

FIGURE 9: FALL-RELATED HOSPITAL STAY RATES,* BY AGE GROUP AND GENDER, MA RESIDENTS AGES 65+, 2010 (N = 21,375 HOSPITAL STAYS)



**Hospital stays include hospital discharges and observation stays; transfers and in-hospital deaths are excluded. Data are fiscal year.*

Data Sources: MA Hospital Discharge and Outpatient Observation Stay databases, MA Center for Health Information and Analysis

Massachusetts race/ethnicity data on falls (2006 through 2010), indicates that older adults who are white, non-Hispanic or Asian have the highest fall death rates at 40.7 and 38.0, respectively, followed by black, non-Hispanic residents at 20.4 and Hispanic residents at 15.4 (all rates are per 100,000).

The impact of falls as a leading cause of injury and death of older adults in the nation and in Massachusetts also takes a financial toll on the greater health care delivery system and society as well.

In 2010, total acute care hospital charges in Massachusetts (includes emergency department visits and hospital stays) associated with older adult fall-related injuries totaled over \$630 million and median hospital charges for older adults admitted to a hospital for such injuries was between \$17,766 and \$19,289, depending on the fall circumstances, e.g. fall from a chair, fall from a bed, etc.). According to CDC WISQARS data for 2005, the combined medical and work loss costs of fatal unintentional falls for Massachusetts residents age 65 and older were estimated to be around \$24.9 million.

The Current Context

In early 2012 three new leaders from the fields of long-term care, home health, and public health were recruited to co-chair the Massachusetts Coalition for

Falls Prevention which had originally been convened in 2006. The Coalition meets quarterly with broad representation in its membership of over 100 members, from state agencies, various health care provider groups, insurers, community-based elder service providers, etc. A key focus for this Coalition is planning and hosting an annual Falls Prevention Awareness Day event every September.

Through a Coalition members e-mail distribution list the DPH Falls Prevention Coordinator and other members can share up to date information on recent research, best practices such as the release of the CDC's STEADI (Stopping Elderly Accidents, Deaths, and Injuries) toolkit, and educational events such as webinars sponsored, for example, by the National Council on Aging.

Community Perspective

a variety of programs to help enable older adults to age in place. Through their involvement a senior can enhance their overall health while also reducing their fall risk.”

Through a partnership formed with Blue Cross Blue Shield (BCBS) of Massachusetts, Massachusetts Medical Society, Boston University Medical Center and certain team members from the CDC's

National Center for Injury Prevention and Control (NCIPC), DPH participated in the development of an educational webinar designed for primary care physicians to promote the importance of falls risk assessment of older adults through the use of the STEADI toolkit. This initiative included a survey/evaluation component to gauge physician attitudes about falls and post-webinar experiences with using the toolkit. The live webinar was held in February 2013 and will eventually be archived for later viewing.

Together with BCBS, DPH (DVIP) also co-developed a new falls prevention consumer education piece that has been widely distributed to all BCBS Medicare beneficiaries across the Commonwealth. DPH (DVIP) also plans to develop other materials for older adults and their caregivers emphasizing prevention and availability of evidence-based falls prevention programs in the community.

In 2010, the Massachusetts legislature passed a new health care reform law that included a provision calling for the creation of an eleven-member DPH-based Massachusetts Commission on Falls Prevention. The new Commission, which began meeting in August 2012, is tasked with conducting a comprehensive study of the serious effects of older adult falls in Massachusetts and recommending strategies on how to reduce their occurrence and the burdensome health care costs associated with them. In the future, the Commission's reported findings and recommendations should serve as guidance for further improving our state's efforts to effectively address this public health problem.

Our Focus

A large body of research on older adult falls confirms that most falls are preventable, primarily through the adoption of some reasonable lifestyle changes:



i.e., review of medications with a physician or pharmacist; annual vision screenings; physical exercise, especially when it improves muscle strength and balance coordination; good nutrition and vitamin D supplementation; and assessment of the home environment for physical obstacles or needed safety enhancements.

We believe that by engaging the right partners and selecting multiple strategies and initiatives the idea that older adult falls can be prevented will become better accepted and understood among Massachusetts' older adults, their family members/caretakers, and members of the medical community. Through 1) targeted improvements in the distribution of falls prevention educational materials; 2) increasing widespread accessibility to evidence-based programming such as Tai Chi and Matter of Balance (to address the fear of falling); and 3) raising health care provider awareness about the importance of falls risk assessment, older adults residing in Massachusetts communities should be better prepared to maintain their independence longer by reducing their risk from the sometimes irreversible effects of falls.

Our Strategies

Infrastructure & Stakeholders:

- Revitalize the Massachusetts Falls Prevention Coalition

Program:

- Train clinical providers on best practice falls prevention
- Develop and disseminate falls prevention education materials for the public

Policy:

- Convene the statutory Massachusetts Commission on Falls Prevention and support their work drafting policy and program recommendations for prevention and surveillance

Data and Surveillance:

- Improve data quality, particularly of hospital coding of circumstance for falls among older adults

Measuring Our Success

Our Falls Prevention activities aim to:

- Increase the monthly dissemination and use of state data and scientific research findings in briefings, presentations, and other communications with decision makers and stakeholders related to reducing falls in older adults in Massachusetts by 2014.
- Stabilize the age-adjusted emergency department visit rate associated with non-fatal unintentional fall injury in Massachusetts residents 65 years and older by FY2015.
- Decrease the age-adjusted hospital stay rate associated with non-fatal unintentional fall injury in Massachusetts residents 65 years and older by FY2015.
- Stabilize the age-adjusted death rate associated with unintentional fall injury in Massachusetts residents 65 years and older by 2014.



Poisonings



Poisonings, which refer to the damaging effects of ingestion, inhalation, or other exposure to pharmaceuticals, illicit drugs, chemicals and pesticides, heavy metals, gases, and common household substances⁴ are the leading cause of injury death in Massachusetts and a major contributor to non-fatal injuries. Poisonings⁵ accounted for 34% of injury deaths and surpassed motor vehicle occupant deaths by a ratio of over 3 to 1 in 2010.

The Facts

From 2000 through 2006, the age-adjusted poison death rate in Massachusetts rose 80%. Compared with the peak rate in 2006, annual rates have been stable or have declined. In 2010, there were 730 poison deaths among Massachusetts residents.

Of these, 72% were associated with an opioid (such as heroin, oxycodone, methadone, Fentanyl,[®] etc.) and 23% were associated with cocaine. The age-adjusted opioid-related poisoning death rate rose 80% from 2000 through 2006.

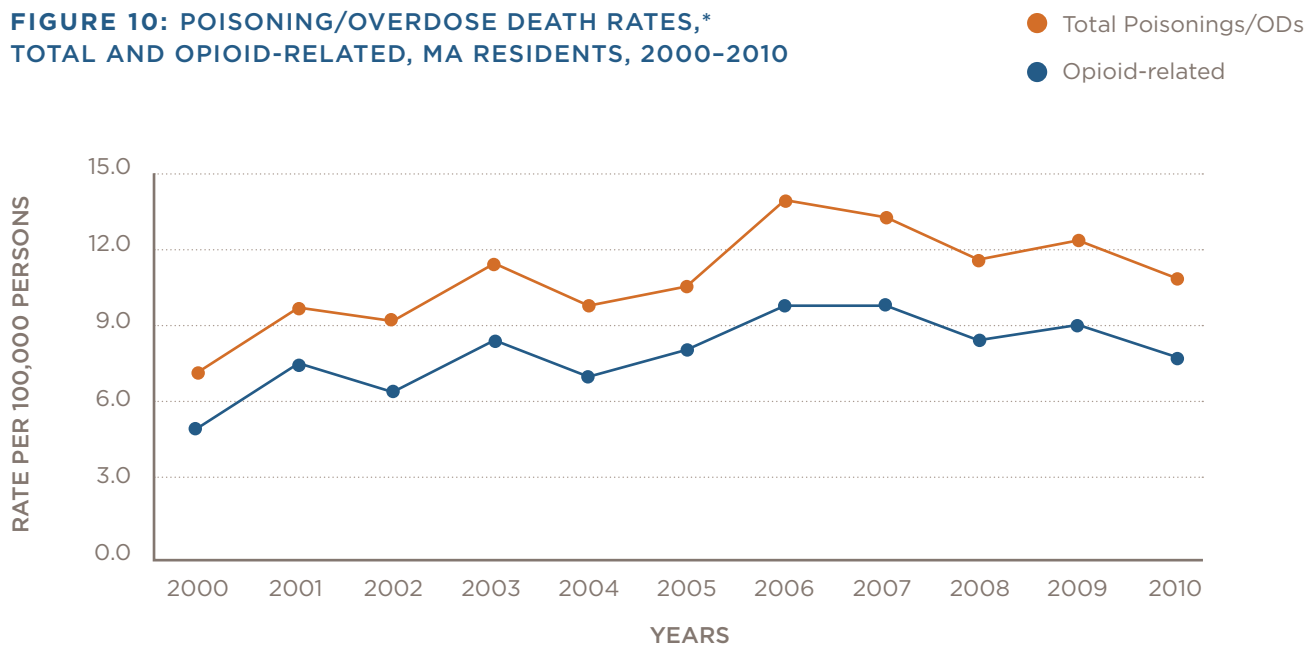
The rates of poisoning deaths, hospitalizations, and emergency department visits are highest in different age groups. Poisoning death rates are currently highest in early adulthood (25–54 years); hospitalization rates are highest in older adults 65+ years; and emergency department visit rates are highest in the very young. Males have higher rates than females at all ages. Environmental factors impacting the risk of poisoning include levels of prescription drugs or toxic agents; and the supply of illicit drugs.

The economic burden of poisonings, particularly for drug overdoses from illicit or misused prescription drugs, is enormous, including lost wages, hospital care, and emergency medical services. In FY2011, the total acute care hospital charges associated with unintentional poisonings was over \$77 million. The social impact is equally substantial. Poisonings/drug overdoses also weigh heavily on family and community institutions, law enforcement, and social services.

⁴ Centers for Disease Control and Prevention. *Unintentional and Undetermined Poisoning Deaths — 11 States, 1990–2001*. MMWR 2004; 53:233–256.

⁵ The poison death data presented in this section includes both unintentional poisoning and poisoning of undetermined intent since, in 2005, there was a change in the classification of these deaths by the Office of the Chief Medical Examiner.

**FIGURE 10: POISONING/OVERDOSE DEATH RATES,*
TOTAL AND OPIOID-RELATED, MA RESIDENTS, 2000-2010**



**Includes poisonings/overdoses of unintentional and undetermined intent only. All rates are age-adjusted.*

Data Source: MA Registry of Vital Records and Statistics, MDPH

The Current Context

Policies and programs that impact poisoning or their outcomes, or are promising best practices existing in Massachusetts include:

- The MA/RI Regional Poison Control Call Center — located at Children’s Hospital in Boston, and financially supported by the MDPH, this Center is staffed by toxicologists, a poison prevention educator, and a pharmacist, and manages more than 37,000 calls about poison exposures annually.
- Opioid Overdose Education and Naloxone (opioid antagonist) Distribution Projects — initially begun by the Boston Public Health Commission and later expanded at the MDPH through the Bureau of Substance Abuse Services (BSAS), this program provides overdose education and naloxone (or Narcan®) kits, an antidote to an opiate overdose, to potential bystanders to an overdose (drug users, friends, family).
- Good Samaritan policies enabling witnesses of an overdose to call 911 without fear of prosecution.
- MDPH Prescription Monitoring Program — established in 1992, this program within the MDPH’s Drug Control Program, supports safe prescribing and dispensing and assists in addressing prescription drug misuse and abuse.
- Provider training in opioid prescribing — effective Feb. 1, 2012, physicians who prescribe controlled substances and are applying to renew their license or obtain a new license must complete at least three credits of education and training in pain management and opioid education.

- Community-based overdose prevention initiatives (MassCALL2) — funded through the BSAS and the Substance Abuse and Mental Health Service Administration, local coalitions work with local government, hospitals, and community-based agencies to advance policies and programming to prevent opioid overdose from occurring and to minimize the consequences of overdose when it does occur.
- Office-Based Opiate Treatment Programs — funded through BSAS, these programs provide detoxification and maintenance treatment to opioid addicted individuals in an office-based setting.

Community Perspective

“Many families within our organization have saved the lives of their loved ones with Narcan. Just since December, five lives have been saved. One was on the very evening the parents were trained and obtained the antidote. If it were not for Narcan these young people would not have had the chance to find recovery. In fact there is a good chance they would not have survived.”

— JOANNE PETERSON, DIRECTOR,
LEARN TO COPE

- Screening and Brief Intervention and Referral to Treatment in Emergency Departments (ED-SBIRT) — takes advantage of teachable moments when people can often make a clear connection between their unhealthy substance use and their need for emergency treatment.

Our Focus

Based upon the significant contribution that opioids have in fatal poisonings, the overall burden of injury deaths in Massachusetts, and the resources (staff, expertise, and funding) available, the focus area identified within this broader priority is to **reduce Opioid Overdose Deaths among Massachusetts Residents.**

The MDPH injury data staff will work closely with the MDPH’s BSAS, Office of HIV/AIDS, Drug Control Program, and other partners to provide data to inform programming, policy development, and evaluation related to the existing work as well as to future initiatives that emerge to reduce these deaths.

Our Strategies

Infrastructure & Stakeholders:

- Develop formalized processes within the MDPH for sharing and examining overdose data.
- Build upon existing relationships with overdose prevention partners in the MDPH’s Bureau of Substance Abuse Services and Drug Control Program and among academic and community-based organizations.

Program:

- Collaborate with the MDPH’s Bureau of Substance Abuse Services (BSAS) on MDPH’s existing overdose education and naloxone distribution project. Injury staff will provide ongoing surveillance data to monitor trends, high risk demographic groups, and project outcomes.



- Collaborate with the MDPH's Bureau of Substance Abuse Services (BSAS) on a community-based opioid overdose prevention project, supporting communities with high numbers of opioid overdoses. MDPH injury staff will play a role in providing data to 1) identify communities most in need; 2) support communities with ongoing data as available; and 3) support the evaluation of this project using existing surveillance systems.
- Work with MDPH partners (BSAS and the Drug Control Program) providing surveillance data to inform new policies being considered by the state legislature and other agencies and organizations related to overdose prevention.
- Collaborate with the MDPH's Bureau of Substance Abuse Services in the implementation and evaluation of existing policies aimed at reducing fatal opioid overdoses through:
 - » Provision of state and community level data on opioid poisoning deaths, hospital and emergency department discharges, and other relevant data to BSAS and other partners.
 - » Leveraging partnerships through MassPINN to provide support for educational forums, dissemination of materials, and other communication strategies on addressing the opioid overdose problem.

Data and Surveillance:

- Collaborate with other states and with the Centers for Disease Control and Prevention (CDC) in conducting a data quality assessment on opioid overdoses treated in inpatient hospital and emergency department settings. This project aims to improve surveillance of drug overdoses by identifying areas or hospitals in need of improvement.

- Participate in a multi-state project with the Council of State and Territorial Epidemiologists (CSTE) to assess and improve the quality of state death certificate data.
- Collaborate with the MDPH's Drug Control Program and other partners to identify the prevalence of doctor shoppers, the level of prescription diversion, and other risk behaviors among residents who die of poisoning.

Measuring Our Success

All of these efforts aim to improve our effectiveness to reduce fatal opioid-related overdoses, either directly through programming and policies or indirectly through the improvement of existing data systems. Our specific outcome measures are listed below:

Our specific outcome measures are listed below:

- Complete the opioid poisoning surveillance quality improvement projects, in collaboration with the CDC and the CSTE, by 2015.
- Increase the monthly dissemination of opioid poisoning surveillance and other data to partners, policy makers, and stakeholders by 2015.
- Increase in the number of new enrollees in Massachusetts in the MDPH naloxone distribution project by the end of 2014.
- Increase in the number of reports to the MDPH's naloxone distribution project of administration of naloxone by bystanders by the end of 2014.
- Decrease the age-adjusted death rate associated with opioid poisoning among Massachusetts residents by the end of 2015.



Motor Vehicle (MV) Crash Injuries



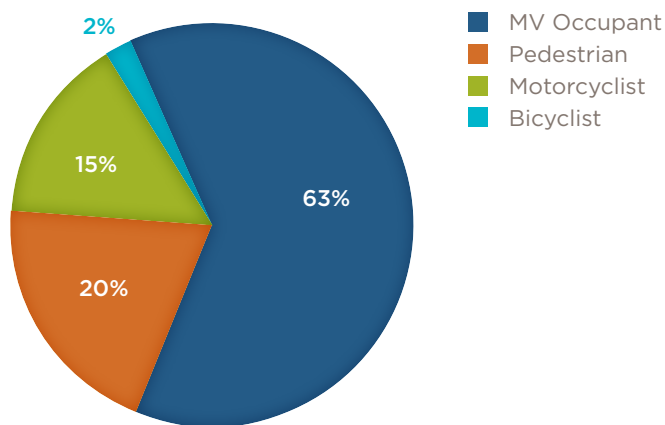
Motor vehicle crashes are the third leading cause of unintentional deaths and hospital stays in Massachusetts and the second leading cause of traumatic brain injury. Motor vehicle crash injuries include injuries to drivers or passengers of cars and trucks (referred to as “MV occupants”), motorcyclists, and bicyclists or pedestrians struck by a motor vehicle on a public road or highway. The majority of deaths and non-fatal injuries caused by MV crashes are to MV occupants. In 2010, 226 Massachusetts residents died from injuries sustained as a driver or passenger in a MV crash (63%), 55 motorcyclists died from crash-related injuries (15%), and 71 pedestrians (20%) and 6 bicyclists (2%) died after being struck by a motor vehicle.

The economic burden of MV occupant injuries to Massachusetts residents is also significant. In 2010, medical costs and lost wages associated with fatal and non-fatal MV occupant injuries to Massachusetts residents totaled over \$900 million.⁶

While MV occupant deaths and injuries have decreased significantly over the past 30 years, over 200 Massachusetts men, women, and children still die needlessly in car crashes every year. In addition, tens of thousands of Massachusetts citizens require medical treatment for injuries sustained as an occupant in a MV crash.

⁶ CDC WISQARS.

FIGURE 11: MOTOR VEHICLE-RELATED* DEATHS, MA RESIDENTS, 2010 (N = 358)



**MV occupants include drivers, passengers, and unspecified persons. Pedestrian and bicyclist deaths not related to motor vehicles are excluded.*

Data Source: MA Registry of Vital Records and Statistics, MDPH

The Facts

Approximately one third (36%) of MV crash deaths in Massachusetts involve an alcohol-impaired driver.⁷ While MV crash deaths and injuries have been decreasing, the percentage of such deaths involving an alcohol-impaired driver only decreased from 38% to 36% over the past decade (2001 to 2010).⁸ Underage drinking and driving is also a concern. Of Massachusetts high school students who drove a car and reported alcohol use, over 15% reported that they had driven after drinking alcohol in the last thirty days.⁹

Community Perspective

“Don’t all of us who work in public service and public affairs do so to make a difference? Passing a primary seat belt law in Massachusetts will save 18 lives and prevent more than 650 injuries every year. I can’t imagine a more profound difference to achieve for those who drive the roadways of our Commonwealth.”

– MARY MCGUIRE,
AAA SOUTHERN NEW ENGLAND

Massachusetts has the lowest seat belt use rate in the nation (73% as compared to the national average of 84%). Many safety advocates attribute this to the fact that Massachusetts has a secondary rather than a primary seat belt law. This means one cannot be stopped by police for not wearing a seat belt — they must be pulled over for another offense, and then be ticketed if they are not wearing a seat belt. States with primary seat belt laws see use rates 9 percentage points higher on average, than states with secondary seat belt laws. Among drivers and front seat passengers, seat belts reduce the risk of death by 45% and cut the risk of serious injury by 50%.¹⁰

Since 2007, when Massachusetts implemented a strengthened Junior Operators License Law (JOL) for novice drivers (16 and 17 year olds) we have seen dramatic drops in teen driver deaths. The average number of junior operators involved in fatal MV crashes in the three-year period prior to the implementation of the strengthened JOL law (2005–2007) was 26 per year. That number dropped to an average of 11 per year during the three years after the law’s implementation.¹¹ This effect is echoed in states that have equally strong JOL laws. Clearly this is a policy strategy that works. There is evidence that parental involvement in the teaching and enforcing of JOL provisions increases the chance of good outcomes even further which is why we have chosen to work with the Massachusetts RMV to increase parents’ knowledge of JOL restrictions.

⁷ Alcohol-impaired defined as having a blood alcohol concentration of .08 or higher.

⁸ NHTSA, 2012.

⁹ MA Youth Health Survey, 2011.

¹⁰ CDC Policy Impact: Seat Belts.

¹¹ FARS Query System; excludes motorcyclists.



TABLE 4: TEN STATES & U.S. TERRITORIES WITH LOWEST SEAT BELT USE IN 2011

Ranking	State or U.S. Territory	Seat Belt Use Rate
48th	Mississippi	79.0%
48th	Wisconsin	79.0%
49th	Arkansas	78.4%
50th	Louisiana	77.7%
51th	American Samoa	77.0%
52th	Montana	76.9%
53th	North Dakota	76.7%
54th	New Hampshire	75.0%
55th	South Dakota	73.4%
56th	Massachusetts	73.2%

Data Source: NHTSA, August 2012

The Current Context

- Massachusetts has comparatively good laws and policies in place in transportation safety. We have a strong graduated driver's license law; a comprehensive child passenger safety law that includes booster seats; a recent no-texting law; bicycle and motorcycle helmet laws; and a solid DUI law. Once these laws are passed, we work with partners to ensure their complete implementation, enforcement and, when appropriate, prosecution.
- We are fortunate to have many partners in this work — coalitions and organizations such as MassPINN (Preventing Injuries Now Network), The Partnership for Passenger Safety (PPS), Belts Ensure a Safer Tomorrow (BEST), The MADOT/

Registry of Motor Vehicles (RMV), Mothers Against Drunk Driving (MADD), The Highway Safety Division of the Executive Office of Public Safety and Security, The DPH office of Occupational Health (DPH), and The DPH Bureau of Substance Abuse Services.

- There are many transportation safety advocates across the state — including SafeKids, Brain Injury Association of Massachusetts, AAA of Southern New England, hospitals, police, and EMS professionals.

Policies and programs that impact transportation or their outcomes, or are promising best practices existing in Massachusetts include:

- The Highway Safety Division of the Executive Office of Public Safety and Security runs the state federally-funded Child Passenger Safety (CPS) Program, distributing equipment grants to programs across the state. They also hold an annual CPS conference, provide technician training throughout the state, and answer CPS-related questions on their 800# hotline.
- The Highway Safety Division of the Executive Office of Public Safety and Security also funds police departments to perform high-visibility enforcement campaigns such as “Click it or Ticket” which targets drivers seat belt use during specified time periods.
- MADOT convenes a statewide group of stakeholders to produce and monitor the Massachusetts Highway Safety Plan. Several of the focus areas include: impaired driving, seat belts, teen drivers, older drivers, and pedestrians.



- The Partnership for Passenger Safety, a statewide coalition of traffic safety advocates, provides opportunities for professional networking, sharing best practices, and education in transportation-related injury prevention.
- Massachusetts law requires that all drivers convicted of DUI for the second time install an ignition interlock on their vehicles. An ignition interlock is a device installed in a vehicle's dashboard. Before the vehicle's motor will start the driver must breathe into the device and if any alcohol is detected on the driver's breath, the car will not start.

Our Focus

Motor vehicle-related injuries were chosen as a focus area through a combination of stakeholder input, resources available, political will, evidence base for solutions, and burden of the injuries in Massachusetts.

As a result we have chosen to focus on:

- Seat Belt Use
- GDL/parents
- Ignition Interlock Science

Our Strategies

Infrastructure & Stakeholders:

- Disseminate state data and research findings to key stakeholders
- Participate in planning and implementation of the MADOT Strategic Highway Plan
- Maintain and support Partnership for Passenger Safety and participate in Belts Ensure a Safer Tomorrow (BEST) Coalition

Program:

- Collaborate with the RMV to ensure that the statutorily-required parent GDL class is of high quality and takes place at the best point in the licensing process to assure retention and use of information

Policy:

- Promote increased use of passenger restraints
- Promote increased imposition of ignition interlock
- Draft and implement a DPH Safe Driving Policy
- Participate in the planning and implementation of the MADOT Strategic Highway Safety Plan

Data and Surveillance:

- Disseminate state data and research findings (through presentations, briefings, responses to data requests, and other communication venues) to stakeholders and decision makers

Measuring Our Success

We anticipate that this work will contribute to the general downward trend in motor vehicle occupant injuries in Massachusetts. Our outcome measures are as follows:

- Increase the percent of Massachusetts residents observed to be wearing their seat belt by 2014.
- Increase the monthly use of Massachusetts data and research findings in presentations, briefings, and data requests to decision makers and stakeholders related to improving occupant safety (restraints, distraction, impairment, etc.) in Massachusetts by 2014.
- Decrease the age-adjusted emergency department visit rate associated with non-fatal motor vehicle traffic occupant injury in Massachusetts residents by FY2015.
- Decrease the age-adjusted hospital stay rate associated with non-fatal motor vehicle traffic occupant injury in Massachusetts residents by FY2015.
- Decrease the age-adjusted death rate associated with motor vehicle traffic occupant injury in Massachusetts residents by 2014.
- Decrease the percent of motor vehicle occupant deaths among Massachusetts fatal crashes that are associated with a driver with a BAC >.08 by 2014.



Injuries to Children



Play time, sleep time, and exploration are all essential activities for the healthy growth and development of children. But these can be opportunities for injury as well. In fiscal year 2011, Massachusetts infants and children ages 0 to 14 years required more than 117,000 emergency department visits and over 2,000 inpatient hospitalizations for treatment of non-fatal unintentional injuries. In 2010, 18 Massachusetts children ages 1–14 years died as a result of unintentional injuries. Additionally 41 infants died due to sudden unexpected infant death (SUID), many of which were associated with risk factors for suffocation, and one infant died as a result of an unintentional injury unrelated to SUID.¹²

The tragedies of a child drowning or falling from a window make the news, but there are many other types of injuries — falling from playground equipment, concussion in sports, bike crashes, scalds from hot water, choking, infant suffocation while sleeping, just to name a few. Yet all of these activities can be made safer, reducing the risk of death or the severity of an injury, often through simple changes in behavior or the environment. This plan focuses on two serious areas of injury to children: sudden unexpected infant death/infant sleep deaths and sports concussion.

Babies are welcomed into a world that is not familiar to them. They rely on parents to protect them from harm. Yet, every year babies die in unsafe sleep environments. Creating a safe sleep environment by placing babies on their backs for sleep in close proximity to the parents, but on a separate, firm surface free of blankets and pillows, has been shown to reduce the number of infants who die in sleep. The DPH IPCP is working closely with stakeholders, including local child fatality review teams, state agencies, and community organizations to make sure that information about safe sleep is widely available and accessible to new parents and all those caring for infants.

The issue of concussion has grabbed media attention in professional sports as well as school and club sports played by our children. We are learning more each day about the potential long-term health consequences of repeat concussion as well as how long it may take a young person to recover from a single, serious concussion.



¹² SUID is defined in this strategic plan as the sudden unexpected death of an infant during sleep, which may be classified by the Medical Examiner as SIDS, suffocation in bed, or undetermined cause of death.

The Facts

Safe Sleep

From 2004 to 2010, an average of 41 Massachusetts infants died each year due to sudden unexpected infant death (SUID). SUID is defined here as the sudden unexpected death of an infant during sleep classified by the Medical Examiner as SIDS, suffocation in bed, or undetermined cause of death. Local Child Fatality Review Teams in Massachusetts have identified that many of these SUID deaths, regardless of their classification, are associated with risk factors for unintentional suffocation and amenable to prevention.

Babies have a higher risk of SUID when placed in a prone (lying on the stomach) or side position to sleep, when they bed share with a parent/caregiver during sleep, and when they are placed to sleep in an unsafe environment such as a crib cluttered with blankets, pillows, or stuffed animals. According to the 2009 Massachusetts Pregnancy Risk Assessment and Monitoring System (PRAMS) survey, a considerable number of new parents continue to place their infants to sleep in unsafe environments:

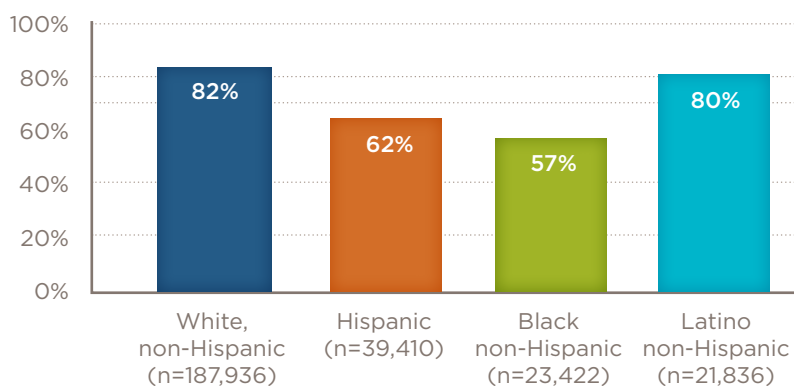
21.4% of new moms reported that they most often lay their new babies down to sleep on their stomachs or sides rather than their backs and 14.7% reported that their new baby usually sleeps in an adult bed with another person.

Significant racial/ethnic disparities exist in the occurrence of SUID. SUID rates in Massachusetts are considerably higher among black non-Hispanic and Hispanic populations. From 2004 to 2010, Massachusetts average annual infant SUID rates among black, non-Hispanic and Hispanic were 3.1 and 1.8 times higher, respectively, than rates among white, non-Hispanic infants (average annual rates of 128.9, 72.8, and 41.3 per 100,000 infants, respectively).

Sports-Related Head Injury

Seventeen percent (17%) of middle and high school students who participate in school sports report that they have had a blow to the head in the previous year that resulted in symptoms associated with concussion. With fewer than 20% of Massachusetts schools providing data, more than 11,000 head injuries were reported to the Department of Public

FIGURE 12: PERCENTAGE OF MOTHERS REPORTING LAYING BABIES ON THEIR BACKS,* MA RESIDENTS, 2007-2010



MOTHERS' RACE/ETHNICITY (N=TOTAL # MOTHERS**)

* Percentage of mothers surveyed who reported that they "most often" lay their babies to sleep on their backs.

**n = estimates of the total number of mothers in each racial/ethnic category. These numbers are weighted to account for over-sampling and non-respondents.

Data Source: Pregnancy Risk Assessment Monitoring System, MDPH



Health in school year 2011–2012, with more than 3,000 of those occurring during schools sports. And we know that young people who have had one concussion are more likely to suffer another concussion.

Community Perspective

“Injuries are the leading cause of death for children aged 14 and under. Many of these tragedies can be prevented through awareness, education and access to safety devices for those who can not afford them. Without childhood injury prevention programs, deaths among children in that age group would be much higher.”

– MANDI SUMMERS, CO-COORDINATOR
SAFE KIDS WESTERN MASSACHUSETTS

The Current Context

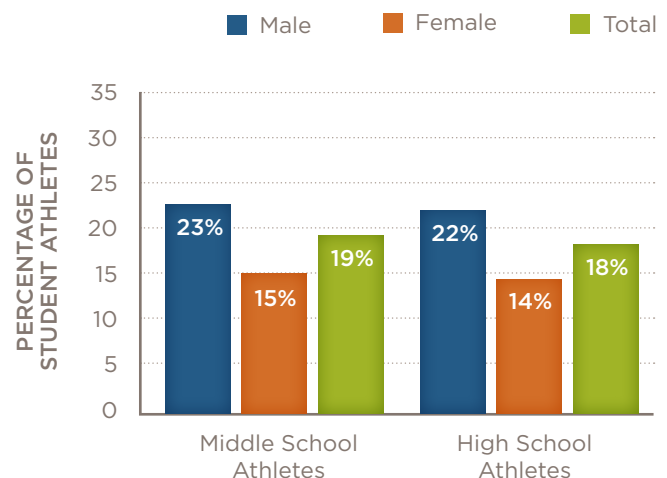
Safe Sleep

The Massachusetts Local and State Child Fatality Review Teams have been pivotal in bringing attention to the issue of safe sleep by examining SUID cases and learning more about the context and settings of these deaths. This work has helped to create an awareness that unsafe sleep environment is at the foundation of many of these cases.

Additionally, relationships and partnerships that have been built between key stakeholders to this work have been critical to the success Massachusetts has seen in promoting policies and programs that work toward preventing SUID. **Some of these successes are:**

- Adoption and dissemination of new MDPH Safe Sleep Recommendations in May 2012 to align with American Academy of Pediatrics (AAP) Recommendations
- Implementation of a WIC provider safe sleep survey and train-the-trainer program in 2013

FIGURE 13: SPORTS CONCUSSIONS IN MA MIDDLE AND HIGH SCHOOL ATHLETES,* 2009



**Only asked of students who reported playing on a sports team in the past 12 months. Sports concussions operationalized as suffering a blow or jolt to head while playing with a sports team (during a game or practice) which caused them to get “knocked out”, have memory problems, double or blurry vision, headaches or “pressure” in the head, or nausea or vomiting in the past 12 months.*

Data Source: MA Youth Health Survey, 2009.

- Incorporation of safe sleep concepts into a Home Visiting Childhood Injury training in early 2013
- Collaboration between state and local child fatality review teams, the Office of the Chief Medical Examiner, and local and state police to develop and use a SUID reporting form every time a SUID is suspected to learn more about the circumstances and potential risk factors surrounding these deaths

MDPH has worked closely with partners, including MDPH Safe Sleep Task Force, Office of Child Advocacy, Massachusetts SIDS Center, Safe Kids, SCFRT, and the Massachusetts Perinatal Team to address the risk factors and disparities associated with SUID.

Sports-Related Head Injury

Massachusetts passed a sports concussion law in July 2010 and the Department of Public Health promulgated regulations for schools in June 2011. These regulations are comprehensive and deal not only with the need for training of school sports staff, parents, and students, but also with the importance of removing injured athletes from play and having graduated re-entry plans and adequate medical clearance procedures in place before athletes return to academics or sports after a head injury.

However, the law and regulations passed with no funding for their implementation. As a result, the Department of Public Health has stressed programmatic support and technical assistance to schools rather than burdensome reporting requirements and penalties for non-compliance. This has created challenges in assuring that schools are implementing the regulations adequately and in evaluating the outcome of the law and regulations.

Our Focus

MDPH will continue to monitor and work with our partners to address drowning prevention, fire and burns, bike helmet safety, window falls, and other causes of injury to children. However, in the coming years we will focus our efforts in two areas where the incidence of injury is high and the Department of Public Health is in the position to effect important change: Sudden Unexpected Infant Death and Sports-Related Concussion.

Safe Sleep

SUID is the number one cause of infant mortality after the age of one month. Dramatic reductions in SUID have been seen as a result of “Back to Sleep” campaigns. However, these gains have not been equally experienced across all race or socio-economic groups. Additionally, child fatality review teams in Massachusetts (and across the country) continue to see cases where infants are dying in unsafe sleeping conditions. MDPH and our sister state agencies and collaborative partners are in a position to educate parents and caregivers about the importance of sleeping infants’ safety.

Sports-Related Head Injury

When MDPH began asking middle and high schools students on a written survey whether they had received a head injury in the last 12 months that had resulted in symptoms consistent with a concussion, nearly 18% of students playing organized sports responded that they had. That is an estimated 36,000 concussions annually among our student athletes. In 2008 Massachusetts passed a state law requiring the Department of Public Health to develop regulations for schools that would help them respond to these injuries with a focus on the emerging science and the health and safety of the student athletes. As a result, MDPH has been a national leader in the implementation of so-called “return to play” laws and as we continue to lead in this area we will evaluate our progress and share with others what works.



MDPH has been in the forefront of developing not only policies, but tools that schools and clinicians can use to assure compliance as the regulations are implemented. Schools require ongoing technical assistance which should be designed to respond to gaps in awareness or quality as the regulations are implemented. Our focus in the coming years will be to assess current implementation and develop responsive technical assistance and support measures to address these gaps and emerging best practices.

Our Strategies

Safe Sleep

Infrastructure and Partnerships:

- Convene multi-agency Safe Sleep Task Force

Program:

- Develop public education materials that address known disparities
- Provide safe sleep education and training to WIC providers
- WIC's nutrition service guidance will include information regarding the inclusion of infant safe sleep in nutrition counseling.
- Provide safe sleep education and training to home visitors

Policy:

- Promulgate the revised MDPH Safe Sleep Policy
- Work with sister state agencies, such as the Department of Children and Families (DCF), Early Education and Care (EEC), and other child care agencies in the adoption and implementation of the MDPH Safe Sleep Policy

- Work with Massachusetts birthing hospitals to develop and adopt safe sleep policies

Data and Surveillance:

- Work with OCME to support the development of a SUID database

Sports-Related Head Injury

Infrastructure and Partnerships:

- Continue to collaborate with MDPH Medical Director, School Health Program, Massachusetts Medical Society, and Massachusetts Interscholastic Athletic Association

Policy:

- Monitor implementation of 105 CMR 201 Head Injuries and Concussions in Extracurricular Athletic Activities
- Improve data collection from schools

Program:

- Assess quality of school policies and provide technical assistance and education to respond to deficits
- Review and approve education and training that complies with regulatory requirements
- Assure medical providers have sufficient education and training to meet their obligations under the regulations

Data and Surveillance:

- Participate in national efforts to enhance evidence base for return to play legislation



Measuring our Success

Through our child injury prevention efforts we aim to achieve the following outcomes:

Safe Sleep

- Increase the number of Massachusetts state agencies involved in the care of infants that have formal policies pertaining to infant safe sleep that align with AAP and MDPH policy recommendations by the end of 2013.
- Increase the number of maternity hospitals in Massachusetts that have formal policies pertaining to infant safe sleep that align with the AAP and MDPH policy recommendations by 2015.
- Increase the percent of Massachusetts mothers of newborns reporting they most often lay their babies down to sleep on their back by 2014.
- Reduce the disparity between WIC and non-WIC mothers reporting they lay their babies down to sleep on their back by 2014.
- Increase the percent of Massachusetts mothers reporting their baby “Never” or “Only on Occasion” sleeps on the same surface with another person by 2014.
- Reduce the disparity between WIC and non-WIC mothers reporting their baby never sleeps on the same surface with another person by 2014.
- Decrease the rate of sudden unexpected infant deaths in Massachusetts infants by 2015.

Sports-Related Head Injury

- Increase the number of Massachusetts high schools and middle schools reporting the number of student athletes sustaining TBI’s in sports-related extracurricular activities in school and the number sustained in all settings by school year 2014–2015.
- Increase the proportion of sampled schools or school districts that have 5 out of 5 key components in their sports concussion policies by school year 2014–2015.
- Increase the number of MDPH approved clinician trainings, covering the identification and clinical management of concussion as well as providers’ responsibilities under the law, by September 2015.
- Increase the percent of Massachusetts high school and middle school students reporting symptoms of a head injury during sports who also reported they stopped playing sports that day by 2015.
- Increase the percent of Massachusetts high school and middle school students reporting symptoms of a head injury during sports who also reported they “got checked by a doctor, nurse, or other health provider” by 2015.



Appendix 1: Acronyms

AAP

American Academy of Pediatrics

BCBS

Blue Cross Blue Shield

BSAS

Bureau of Substance Abuse Services (at MDPH)

CDC

Centers for Disease Control and Prevention

CFRT

Child Fatality Review Team

DCF

Department of Children and Families

DCP

Drug Control Program

DVIP

Division of Violence and Injury Prevention

EEC

(Department of) Early Education and Care

EMS

Emergency Medical Services

EOPSS

Executive Office of Public Safety and Security

GDL

Graduated Driver's License (see JOL)

IPCP

Injury Prevention and Control Program (at MDPH)

ISP

Injury Surveillance Program (at MDPH)

JOL

Junior Operator License (see GDL)

MADOT

Massachusetts Department of Transportation

MassPINN

Massachusetts Prevent Injuries Now Network

MDPH

Massachusetts Department of Public Health

MFPC

Massachusetts Falls Prevention Coalition

PCC

Poison Control Center

OCME

Office of Chief Medical Examiner

RMV

Registry of Motor Vehicles

SCFRT

State Child Fatality Review Team

TBI

Traumatic Brain Injury

VNA

Visiting Nurses Association

WIC

Women, Infants and Children



Appendix 2: Evidence base: References

Evidence for the effectiveness of interventions and policies in each of the plan's priority areas can be found through the following websites and resources:

Falls Prevention

American Geriatrics Society: *AGS/BGS Clinical Practice Guideline: Prevention of Falls in Older Persons* (2010) http://www.americangeriatrics.org/health_care_professionals/clinical_practice/clinical_guidelines_recommendations/2010/

Centers for Disease Control and Prevention: Older Adult Falls Publications including STEADI (Stopping Elderly Accidents, Deaths and Injuries) Health Care Provider Toolkit: <http://www.cdc.gov/HomeandRecreationalSafety/Falls/pubs.html>

The Cochrane Collaboration, *Interventions for Preventing Falls in Older People Living in the Community* (review); abstract 2012 <http://onlinelibrary.wiley.com/doi/10.1002/14651858.CD007146.pub3/pdf/abstract>

National Council on Aging-Center for Healthy Aging: <http://www.ncoa.org/improve-health/center-for-healthy-aging/falls-prevention/>

U.S. Preventive Services Task Force, Recommendations on the Prevention of Falls in Community-Dwelling Older Adults (May 2012) <http://www.uspreventiveservicestaskforce.org/uspstf/uspfalls.htm>

Poisoning Prevention

Community-based opioid overdose prevention programs providing naloxone — U.S. 2010. MMWR 2012 <http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6106a1.htm>

Prescription monitoring programs — an assessment of the evidence for best practices. September 20, 2012. Brandeis University, The Prescription Drug Monitoring Program Center for Excellence. http://www.pdmpexcellence.org/sites/all/pdfs/Brandeis_PDMP_Report.pdf

Interim evaluation of the Washington state interagency guideline on opioid dosing for chronic non-cancer pain. 8/2009 Prepared by the Washington State Office of the Attorney General. <http://www.agencymeddirectors.wa.gov/Files/AGReportFinal.pdf>

American Society of Interventional Pain Physicians (ASIPP) guidelines for responsible opioid prescribing in chronic non-cancer pain: part I — evidence assessment, 2012. <http://painphysicianjournal.com/2012/july/2012;15;S1-S66.pdf>

Washington's 911 Good Samaritan Drug Overdose Law: Initial Evaluation Results (November 2011) Prepared by the University of Washington Alcohol and Drug Abuse Institute. <http://adai.uw.edu/pubs/infobriefs/ADAI-IB-2011-05.pdf>

CDC Vital Signs: Prescription painkiller overdoses in the US (November 2011); Centers for Disease Control and Prevention. <http://www.cdc.gov/VitalSigns/pdf/2011-11-vitalsigns.pdf>

Transportation Injury Prevention

Efficacy of Primary Seat Belt Policy and evidence base of seat belt use decreasing injury deaths: <http://www.thecommunityguide.org/mvoi/safetybelts/index.html>

Evidence base for effectiveness of ignition interlocks decreasing DUI: <http://www.thecommunityguide.org/mvoi/PIIS0749379710007105.pdf>; <http://www.thecommunityguide.org/mvoi/AID/ignitioninterlocks.html>

Teen Driver information for Parents www.cdc.gov/parentsarethekey

Children's Hospital of Philadelphia Teen Driver Research page www.teendriversource.org



Childhood Injury Prevention

Safe Sleep

American Academy of Pediatrics, SIDS and Other Sleep-Related Deaths: Expansion of Recommendations for a Safe Infant Sleep Environment <http://pediatrics.aappublications.org/content/early/2011/10/12/peds.2011-2284.full.pdf+html>

National Institute of Child Health and Human Development — Safe to Sleep Campaign formerly known as the Back to Sleep campaign aims to educate parents, caregivers, and health care providers about ways to reduce the risk for Sudden Infant Death Syndrome (SIDS) and other sleep-related causes of infant death. <http://www.nichd.nih.gov/sids/>

National SUD/SIDS Resource Center: Providing resources to states, communities, professionals, and families to reduce sudden unexpected infant death (SUID)/Sudden Infant Death Syndrome (SIDS) and promote healthy outcomes <http://www.sidscenter.org/>

MA Department of Public Health, Infant Safe Sleep Flyer <http://www.bmc.org/Documents/MAdph-theGiftofSafeSleep.pdf>

Children's Safety Network: Resources for information about safe sleep: <http://www.childreissafetynetwork.org/injurytopics/safe-sleep>

Sports-Related Head Injury/Concussion

Centers for Disease Control and Prevention, Heads Up Concussion: <http://www.cdc.gov/concussion/sports/index.html>

Sports Legacy Institute, resources for information about sports-related head injury and the latest science on traumatic encephalopathy as well as training to prevent long term consequences of concussion: www.sportslegacy.org/

Falls — Children

Safe Kids Worldwide Falls Prevention Fact Sheet: <http://www.safekids.org/our-work/research/fact-sheets/falls-prevention-fact-sheet.html>

Children can't fly: a program to prevent childhood morbidity and mortality from window falls <http://ajph.aphapublications.org/cgi/reprint/67/12/1143.pdf>

How can Injuries in Children and Older Adults Be Prevented?: A paper of the World Health Organization. This link focuses on falls prevention across the lifespan. http://www.euro.who.int/__data/assets/pdf_file/0004/74686/E84938.pdf

Drowning

Child Drowning Prevention — Best Practices — Arizona and Australia http://www.doh.state.fl.us/injury/PDF/ChildDrown_BestPractices.pdf

General

Evidence-based policy: Strategies for Improving Outcomes and Accountability, from Center for Child and Family Policy, Duke University. http://www.childandfamilypolicy.duke.edu/pdfs/familyimpact/2009/BriefingReport_09.pdf

Preventing injuries: at home, at play, and on the way http://www.homesafetycouncil.org/aboutus/research/re_sohs_w008.asp

National Center for Injury Prevention and Control, CDC. Evidence-based Effective Strategies for Preventing Injury: Child Restraints, Seat Belts, Reducing Alcohol-Impaired Driving, Teen Drivers, Child Abuse Prevention, Bike Helmets, Residential Fire, and Drowning. <http://www.ihs.gov/MedicalPrograms/InjuryPrevention/Documents/David%20Wallace%20effective%20strategies.pdf>





Massachusetts Department of Public Health

Bureau of Community Health and Prevention
Division of Violence and Injury Prevention

Bureau of Health Statistics Research & Evaluation
Injury Surveillance Program